**Summary of POAMA operational climate forecast services of Australian Bureau of Meteorology: 2013-2018**

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**Abstract**

Since 2013 the Australian Bureau of Meteorology's National Climate Centre (NCC) has upgraded its operational climate outlook services from statistic based system to a dynamic model named Predictive Ocean and Atmosphere Model for Australia (POAMA) based. Development and application of this first dynamic model based forecast system with potential forecast capability being investigated to support the designing of the so called lagged ensemble approach. It was also found that POAMA is especially skilful over the most populated coastal areas of the country. By use of the so called confident forecasts, the reliability and accuracy of the services could be further improved.

After about 6 years of services, in 2018, POAMA was replaced by the more advanced model called Australian Community Climate and Earth System Simulator for seasonal prediction (ACCESS-S). In order to improve the dynamic model based climate outlook practice, the performance of POAMA has been investigated. Using same verification metrics, performance of POAMA’s real-time forecasts were compared with its potential skills estimated from its hindcast analysis showing that real-time forecasts actually outperformed the hindcast in general. Being aware of the skill differences between real-time and hindcast, it was also argued that hindcast assessment should mainly be used to conclude whether the model has reliable and significant skill or not, in order to justify the application of a model. In other words, users should not over-interpret hindcast skill as it has inevitable uncertainties caused by all sorts of reasons, hence actual skill may change from one forecast to another and from one event to another. Some typical successful or failed forecasts were discussed in more details to assess POAMA’s real-time performance.

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